

REMARKS

In response to the Office Action mailed November 16, 2005, Applicant respectfully requests reconsideration of the application as now amended. Claims 1-34 were previously pending in this application. Claims 1-34 have been canceled without prejudice or disclaimer. New Claims 35-55 have been added, with claims 35, 47, 54 and 55 being independent. No new matter has been added. The application is believed to be in condition for allowance.

Rejections Under 35 U.S.C. § 112

The Office Action rejected claim 28 as not further limiting claim 23 from which claim 28 depended. Claims 23 and 28 have been canceled. Accordingly, withdrawal of this rejection is respectfully requested.

Rejections Under 35 U.S.C. § 103

The Office Action also rejected previous claims 15-21, 23-29, and 31-34 under 35 U.S.C. § 103(a) as being unpatentable over Martens (U.S. Patent No. 4,576,850) in view of Yoshimi. (Japanese Patent No. JP8137375). Applicant respectfully traverses this rejection in view of the new claims 35-55.

Martens indeed illustrates a method of making optical devices (Col. 1, lines 1-2). As shown in Figure 9, an extrusion die 33 extrudes a curable mixture on to a metal mold 34 containing a lens pattern 35 (Col. 55, lines 22-28). A "cover" film 36 is then placed adjacent to the metal master roll 34 (Col. 55, lines 28-33). A curable mixture is fed into the mold and then cured with the use of lamps 42, irradiating the mixture through the base film 36 resulting in the formation of micro-lenses 43 (Col. 55, lines 33-37). The replicated micro-lenses are then individually cut out from the resulting laminate (Col. 55, lines 37-40).

Applicant has now also obtained a machine translation of Yoshimi into English, which is enclosed with this Amendment. Yoshimi illustrates a method of producing relief type holograms by using *thermal deformation* of relief patterns (abstract). The process of Yoshimi is explained in four steps. First, as shown in Figure 1, a photosensitive thermoplastic resin constituent 1 is placed on a base material 2 (Yoshimi, paragraph [0015]). Second, as shown in Figure 2, a metal mold 3 is placed on the thermoplastic layer and, by applying *heat and pressure*, a toothing-like relief pattern 4 is formed (Yoshimi, par. [0016]). In a third and *separate step*, shown in Figure 3,

an optical exposure 6 is performed through mask 5 and then onto the front face of the toothing-like relief pattern 4 (Yoshimi, par. [0016]). The optical exposure 6 through mask 5 results in a curing of pattern 4 therefore forming fields 7, 8, and 9, shown in Figure 4, with differing degrees of hardening (Yoshimi, par. [0016]). Finally, a fourth step, shown in Figure 5, visualizes the photo-curing latent image recorded by steps 1-3 by heating the relief image formation material (Yoshimi, par. [0017]).

The last Office Action asserts it would have been obvious to one skilled in the art to modify the system described in Martens to employ a blocking pattern, as described in Yoshimi, in order to construct a prism structure with relief patterns which are cured to varying degrees. Applicant respectfully disagrees that (A) one of skill in the art would even try to combine these references and (B) even if they were combined, not every element of the claims, as amended, would be found.

A. THERE IS NO MOTIVATION TO COMBINE MARTENS AND YOSHIMI

We respectfully submit that there would have been no motivation to one of skill in the art to combine the teachings of Martens and Yoshimi.

Martens is clearly concerned with continuous formation of *individual lens elements* on a base (carrier) sheet, not an *optical film*. In the pertinent portions of FIG. 9 of Martens and the corresponding text sections, the lenses are formed by extruding a liquid polymer onto a metal master roll 34. The individual lens elements are then cured and adhered to a cover (or base) film 36. The resulting laminate 43 comprises a continuous replicated set of lenses located on the base film 36. The lens elements are then cut out.

Thus, while Martens is a continuous process, it is not even directed to a forming an *optical film*, as set forth in all of Applicants claims.

The Yoshimi prior art is a stepped, and not a continuous process. For that reason alone, one of skill in the art would not attempt to combine Yoshimi with Martens.

Furthermore, Yoshimi is impressing patterns by applying heat and pressure, i.e., by *thermal deformation*. The patterns are applied as a separate step, after the object is already in a solid (cured) state, and while the cured substrate is held in position in a stationary mold.

Applicants do not form the deformations in the optical structures by a subsequent thermal deformation; they are formed at the same time that the substrate is cured.

Thus, one of skill in the art would not look to Yoshimi, which does not concern films and which is not a continuous process, and which only concerns thermal deformations applied after curing, for any insight as to how to continuously manufacture an optical film with deformations in the optical structures.

B. THE COMBINATION OF MARTENS AND YOSHIMI DO NOT PROVIDE ALL ELEMENTS OF APPLICANTS CLAIMED INVENTION

Even if it were to occur to one skilled in the art to combine Martens and Yoshimi (which Applicant does not concede) the Applicants' claimed invention would still distinguish over any such combination for at least two reasons.

1. Neither Martens nor Yoshimi teach or suggest photo-curing of a material by overlapping a mask on a base film, such that the radiation passes through the mask and through the base film at the same time, to cure the liquid material.

Yoshimi indeed teaches photo-curing through a mask. However, Yoshimi's mask is positioned over an exposed top surface of the substrate. Yoshimi is not photo-curing through both a mask and a base film.

Martens is photo curing, but only through a base film. There is no mask used or suggested to be used in Martens.

At best, a combination of Martens and Yoshimi would result in a process where a radiation cured material is formed at a first location, such as by curing through the base film. The base film would then be fed to a second location at which a mask is placed over the top surface of the already cured material, as taught in Yoshimi. *Thus, even in the combination of Martens and Yoshimi, the radiation would not pass through both the base film and the mask film at the same time.*

In claim 35, only the Applicant positions a radiation transparent base film adjacent to the radiation curable liquid material, and then overlaps a mask film on the base film such that the liquid material is cured by exposing it to the radiation source. In only the Applicants' claimed

invention does radiation pass first through the mask film and then through the transparent base film, to reach the uncured liquid material in the mold.

2. Neither Martens or Yoshimi teach forming distortions in an optical structure at the same time that curing occurs, with the use of differential radiation exposure.

Yoshimi teaches differential hardening in a relief pattern, and then by using a separate and subsequent step of applying heat, the deformations are actually formed. (Yoshimi, pars. [0016]-[0017]). Therefore, a combination of Martens and Yoshimi would only form deformations in an already solid optical structure by applying heat.

In contrast to this, Applicants' claim 35 calls for simultaneously curing and deforming the liquid material in a single step. By overlapping the mask on the base film and then exposing both the mask and the base film to radiation, Applicants' process cures the liquid material. At the same time, the Applicants' claimed process provides the cured optical structures with distortions in their shape (as would otherwise be defined by the mold alone). All of this occurs as a single step.

In other words, neither Martens nor Yoshimi teach or suggest deformation of an optical shape taking place *at the same time* as the photo-curing, as claim 35 now requires. Yoshimi instead teaches a deformation step which takes place *after* the photo-curing step. Furthermore, the deformation step in Yoshimi is performed by applying heat, and *not with the use of photo-curing* (Yoshimi [0017]). Again, at best, all that one would arrive at with the combination of Martens and Yoshimi is a multi-step process, i.e., of curing the base film, and then subsequently applying a mask to define the deformations. One of skill in the art would not have been taught how to cure the basic substrate and optical structures as defined by the mold, while imparting deformations to the optical structures as defined by a mask, as a single step.

Claim 35 thus indeed has several elements that are not found in the combination of Martens and Yoshimi and should therefore be allowed.

C. THE OTHER CLAIMS ARE ALSO PATENTABLE

The claims that depend from claim 35 are allowable for the same reasons.

Claim 47 is directed to an apparatus for forming an optical film which requires both a mask film and a base film dispenser for feeding a transparent base film between the mask and the mold, as well as a radiation source positioned for simultaneously curing and patterning the liquid material by irradiating the liquid material through the overlapping mask and base film. Claim 47 also requires that the liquid material is cured at the same time distortions as defined by the mask are patterned in the optical structures. Claim 47 is thus allowable for the same reasons as claim 35.

Claim 42 and the claims that depend from claim 47 are allowable for the same reasons.

Claim 54 is an apparatus claim that has similar elements as claim 35 and is therefore allowable for at least the same reasons. However, claim 54 adds additional features as well that further distinguish prior art. For example, claim 54 requires a rotating cylinder mold with linear grooves formed on an outer surface thereof. No such rotating cylinder mold with linear grooves is found in Yoshimi or Martens.

Furthermore, claim 54 requires not just a first roller for continuously supplying the radiation transparent optical base film but also a second roller for supplying a continuous mask film near the liquid material dispenser location, as well as a pinch roller for placing the continuous mask film adjacent to the continuous optical film near the dispensing location. Even in the combination of Martens and Yoshimi, no arrangement is suggested whereby a continuous mask film is used at all, never mind positioning such a continuous mask film directly adjacent to the base film.

Similarly, the Applicants' step, in claim 54, of providing a radiation source such that both the radiation curable material is simultaneously cured and patterned is not found in the prior art. Nor is the claimed second pinch roller for further holding the mask film and optical film in position with respect to the rotating mold, nor are there first and second wind-up rollers provided or suggested in the combination of the prior art.

Claim 55 is a method claim having elements that correspond more or less to apparatus claim 54 and thus is allowable for the same reasons.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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